

Fig.1

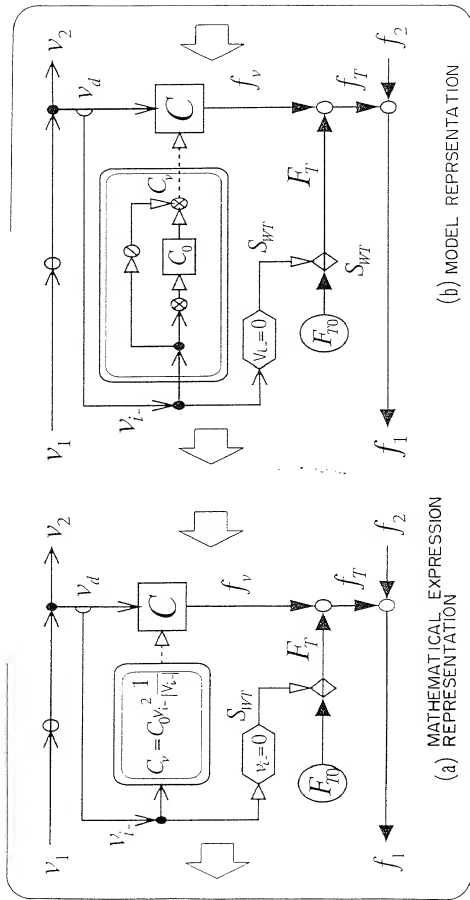


Fig.2

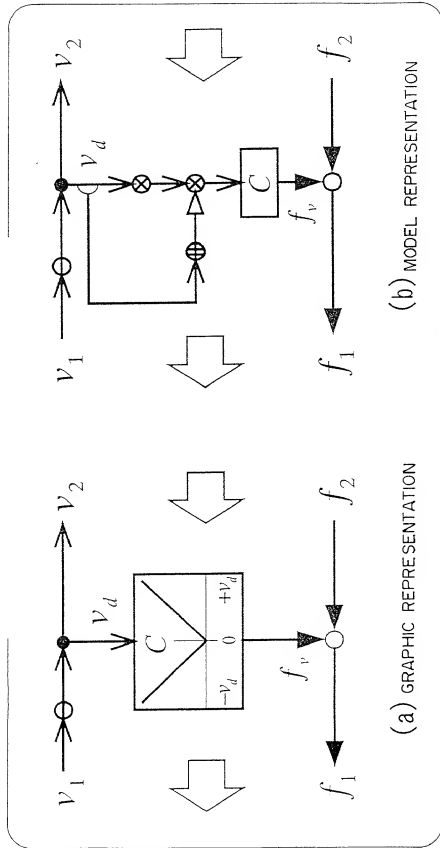


Fig.3

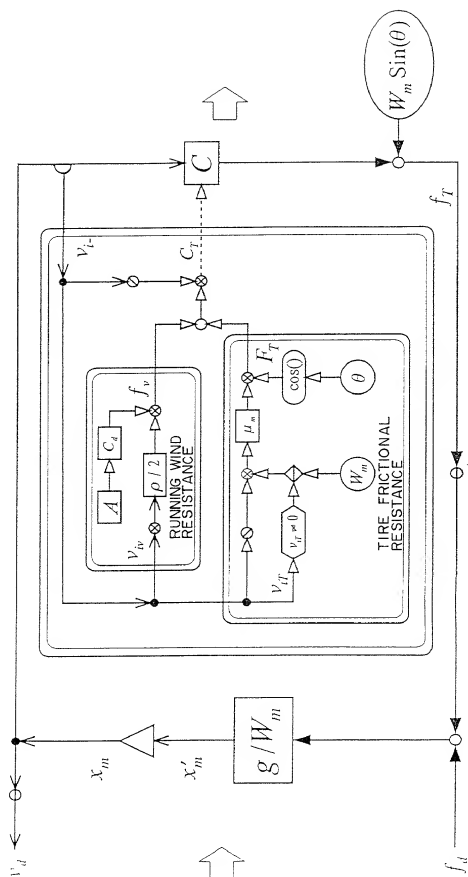


Fig.4

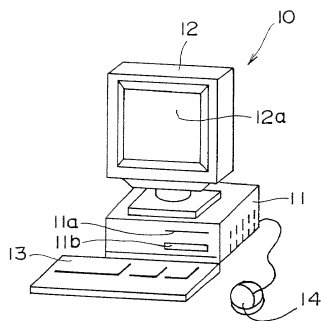


Fig. 5

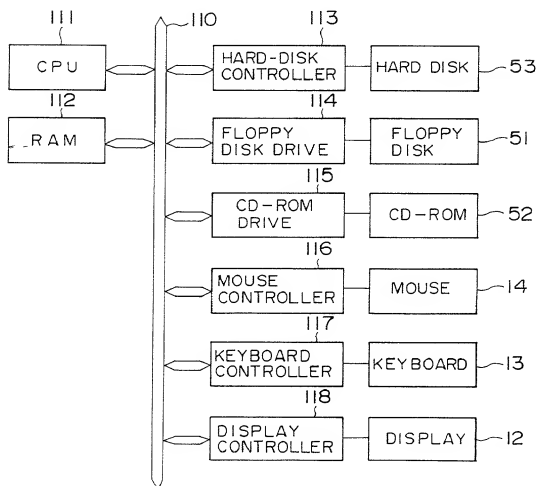


Fig. 6

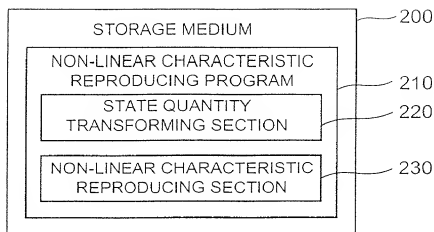


Fig. 7

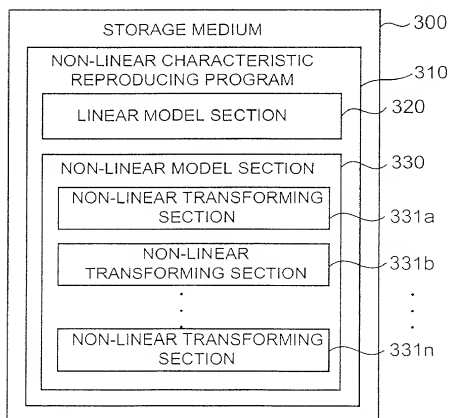


Fig. 8

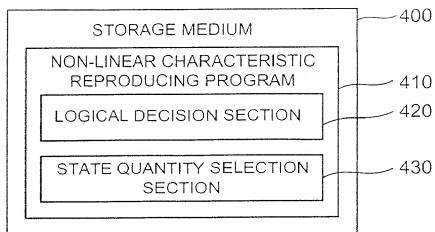


Fig. 9

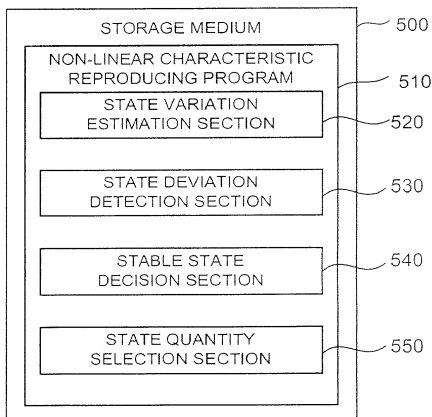


Fig. 10

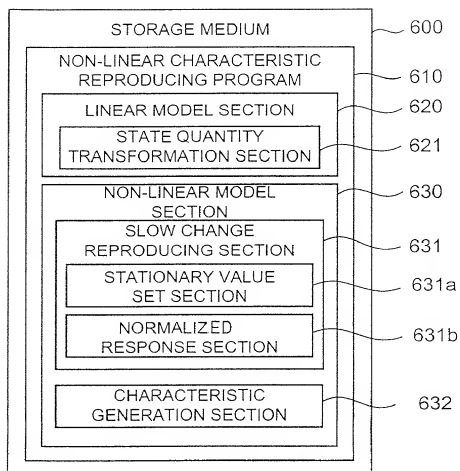


Fig. 11



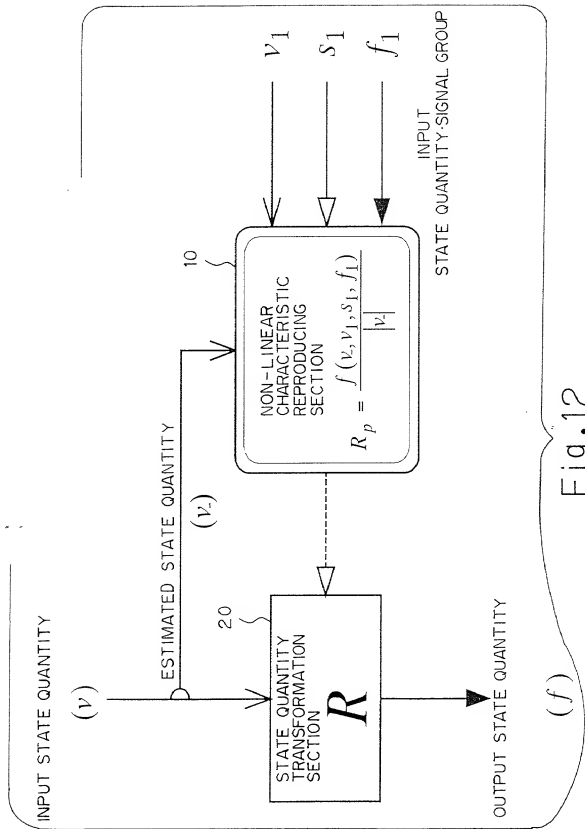


Fig.12

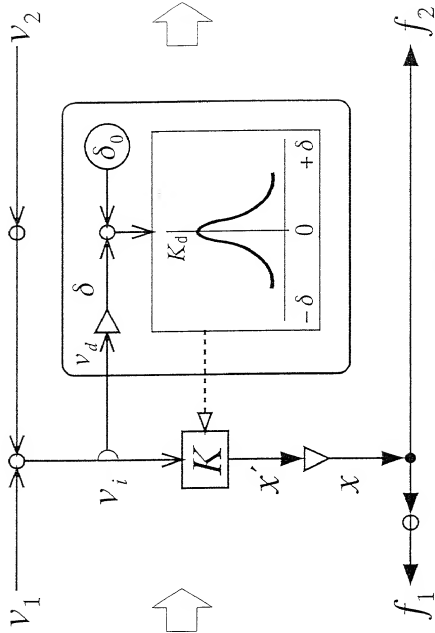


Fig.13

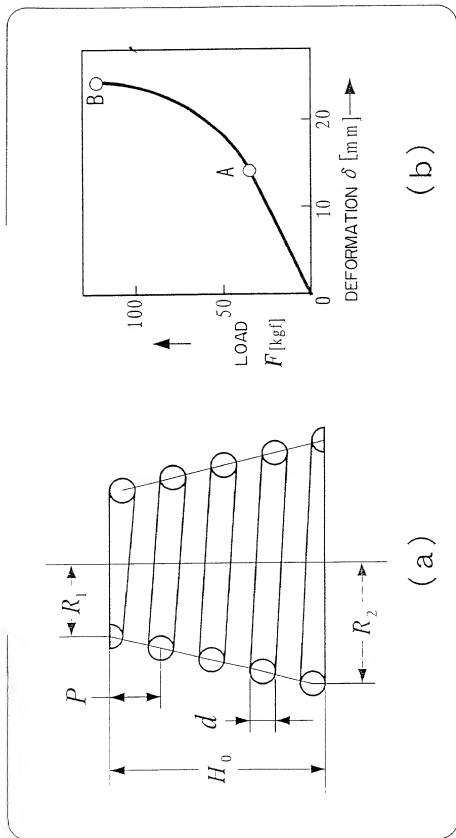


Fig.14



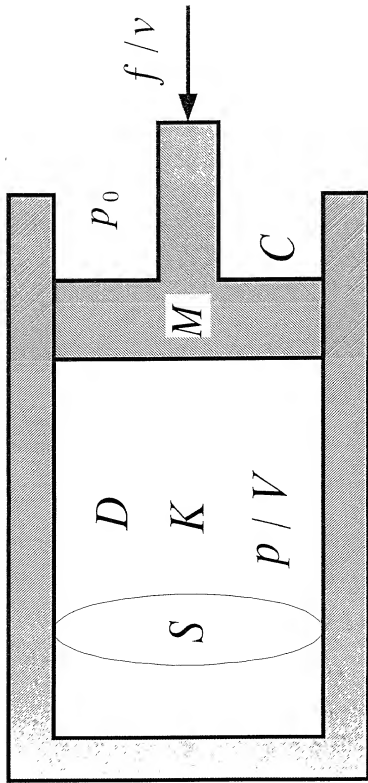


Fig.16

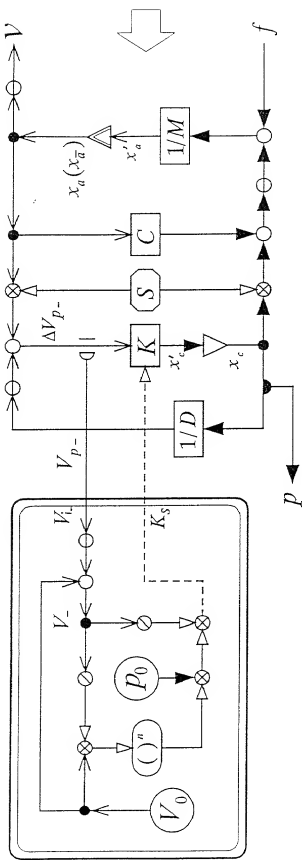
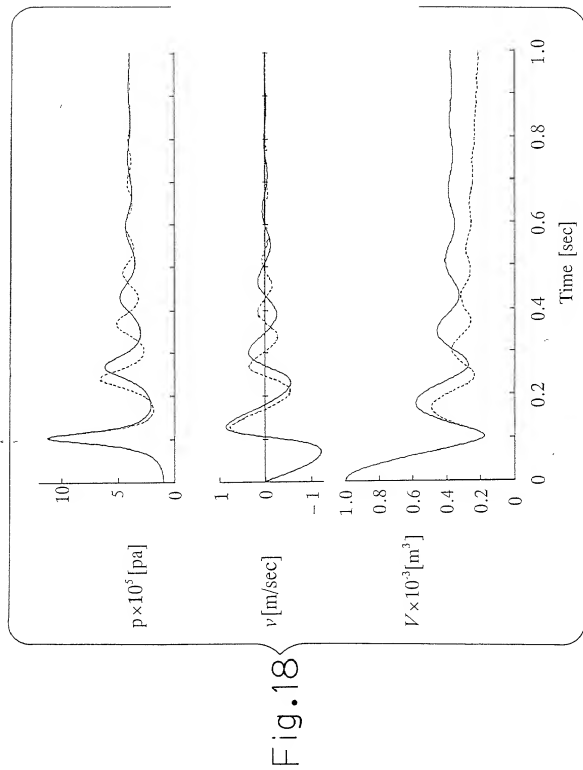
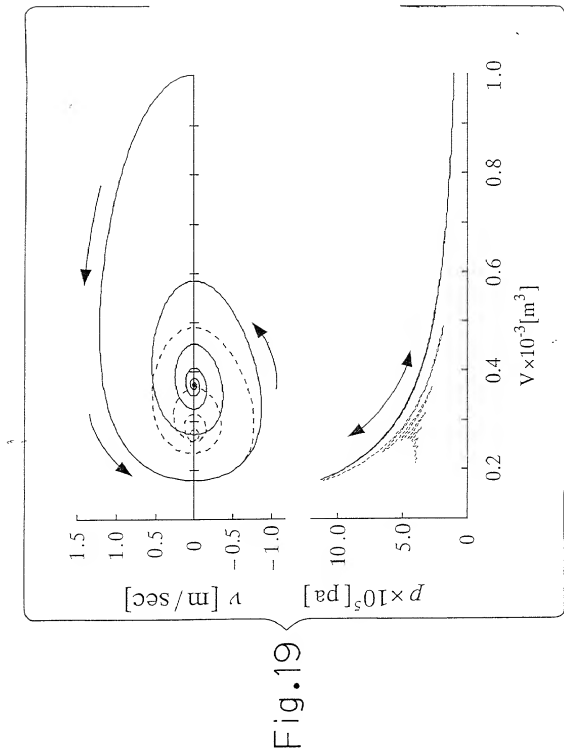


Fig.17







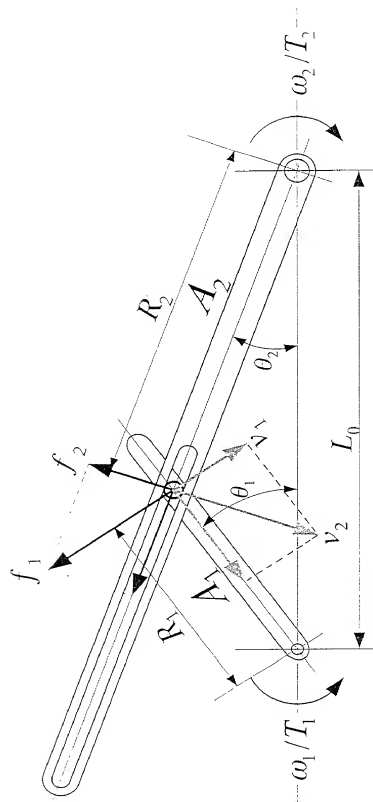


Fig. 20

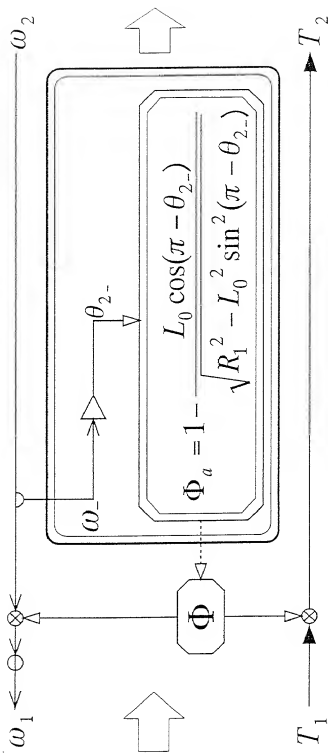


Fig.21

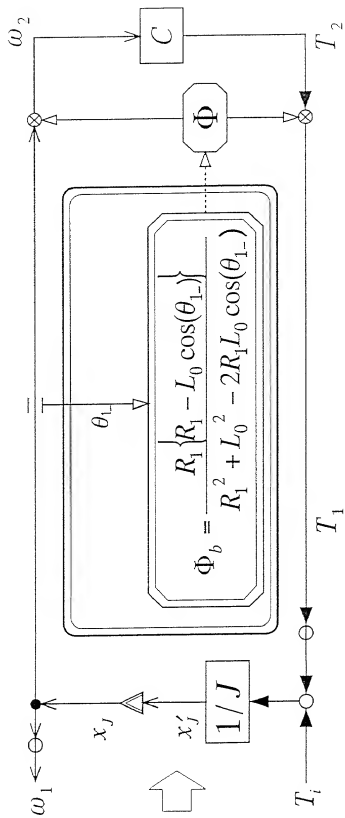
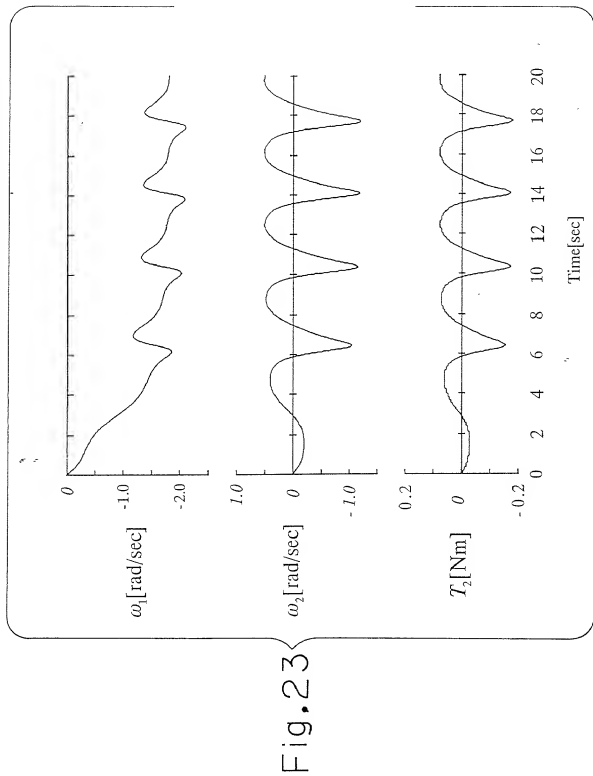


Fig. 22



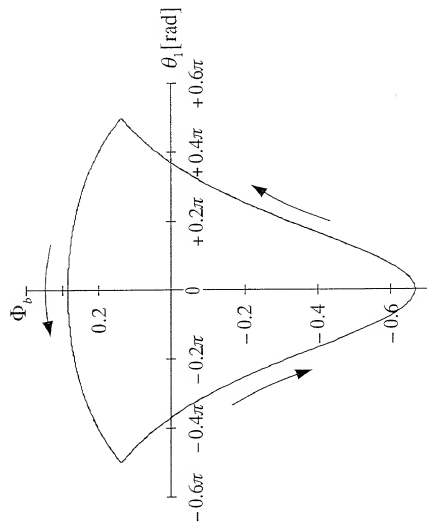


Fig.24

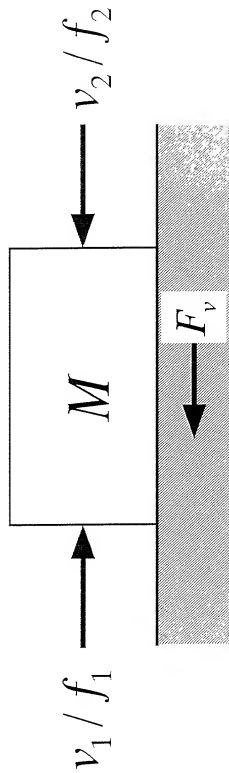


Fig.25

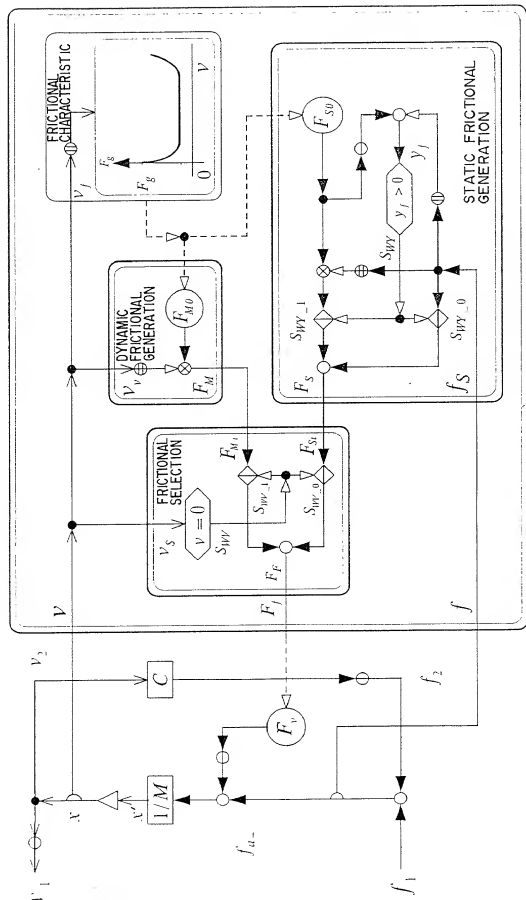
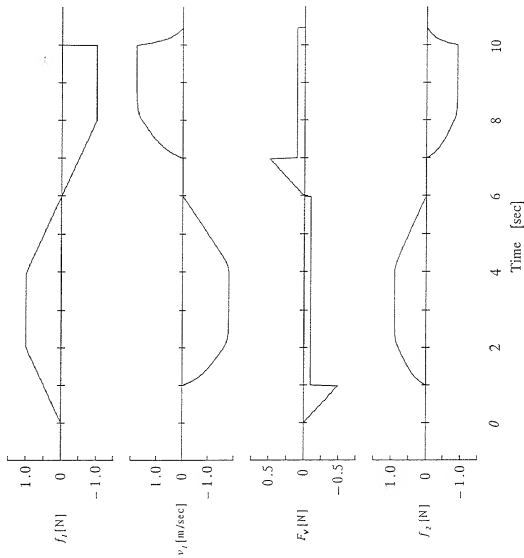


Fig. 26

Fig.27







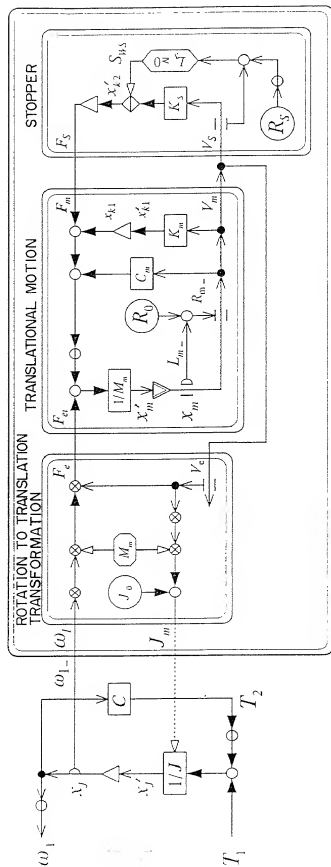


Fig.29

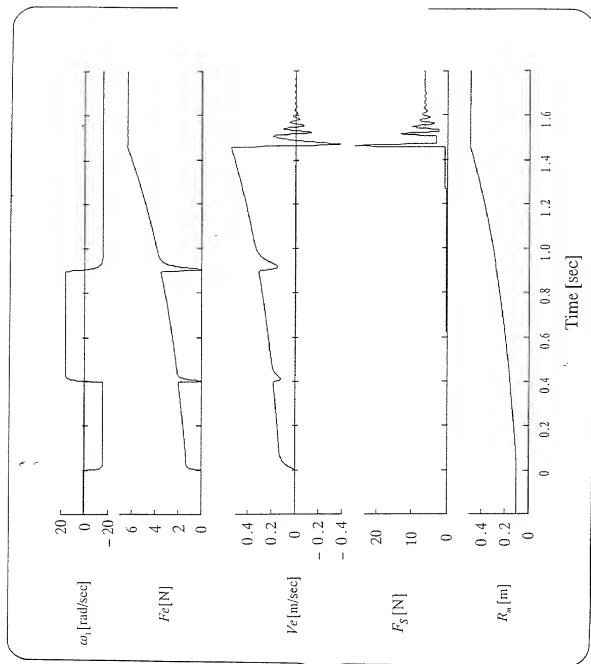


Fig.30

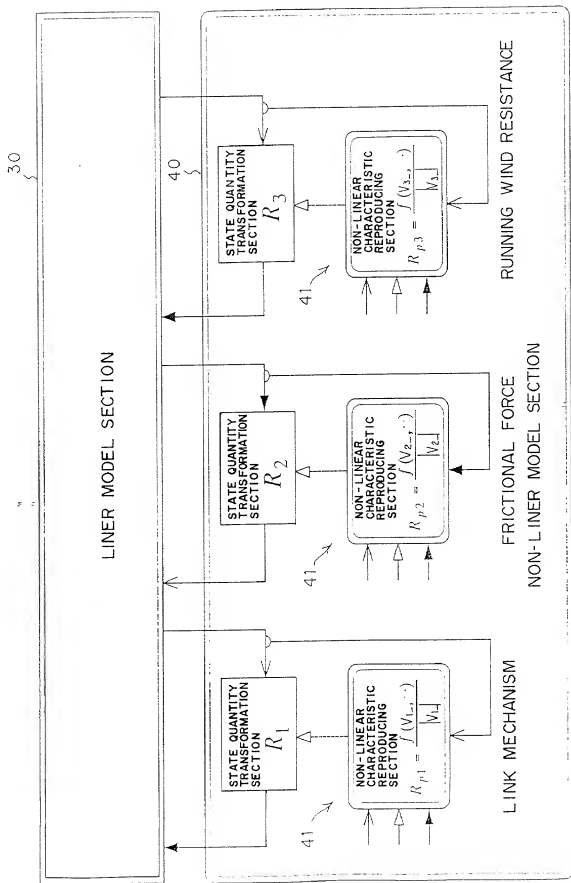


Fig. 31

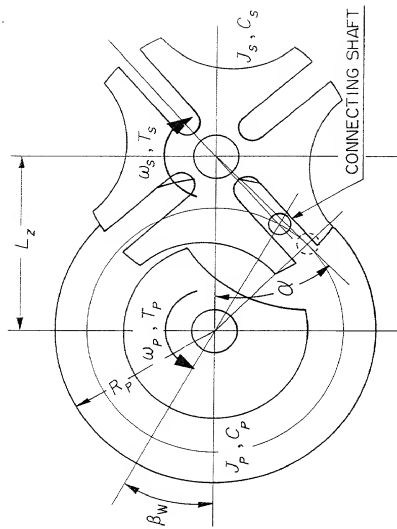


Fig.32

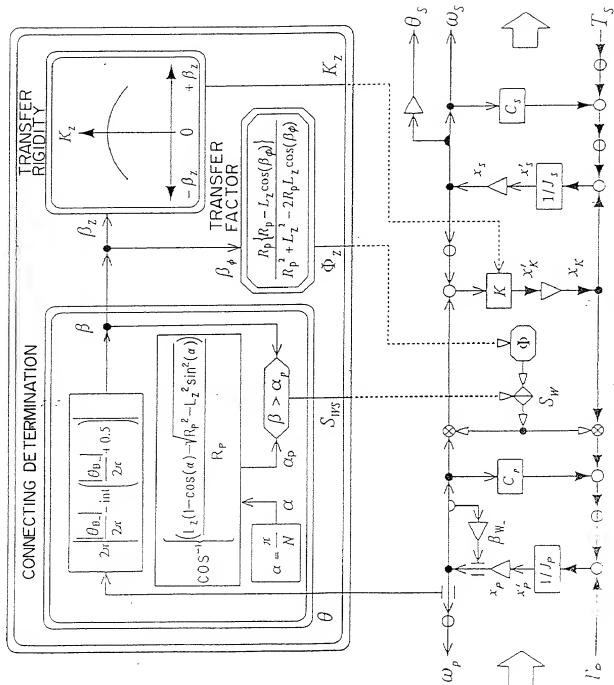


Fig. 33

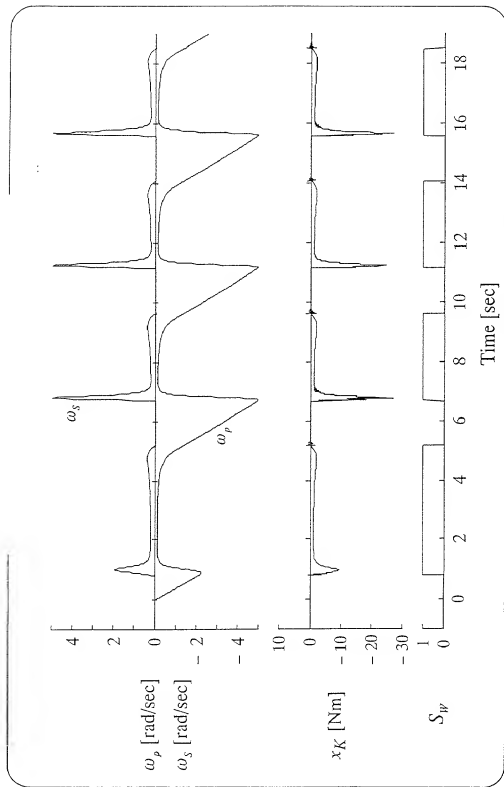


Fig.3.4

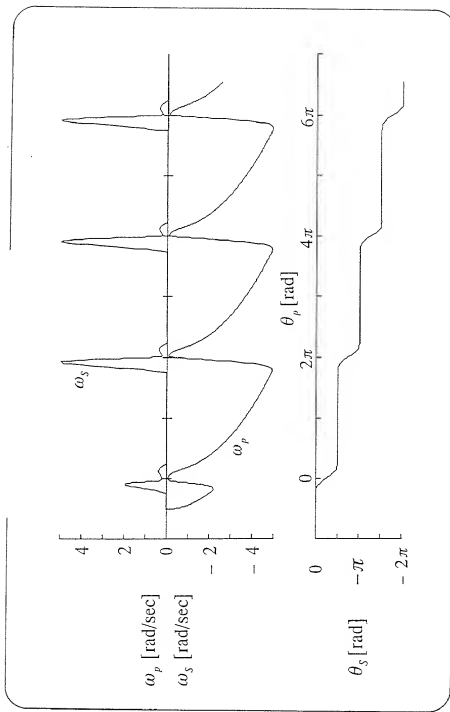


Fig.35



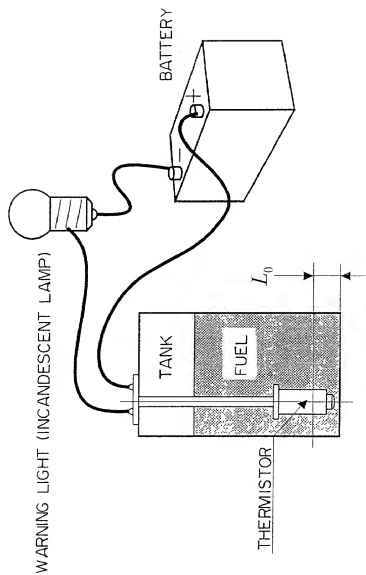


Fig.36

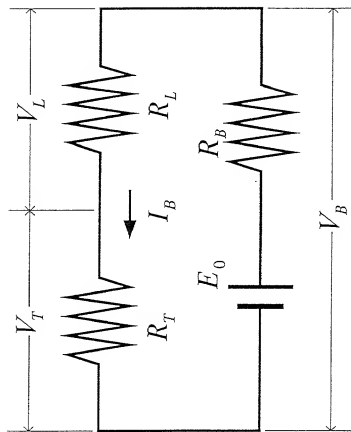


Fig. 37

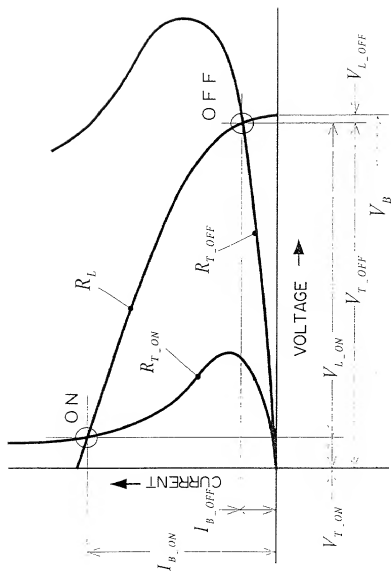


Fig.38

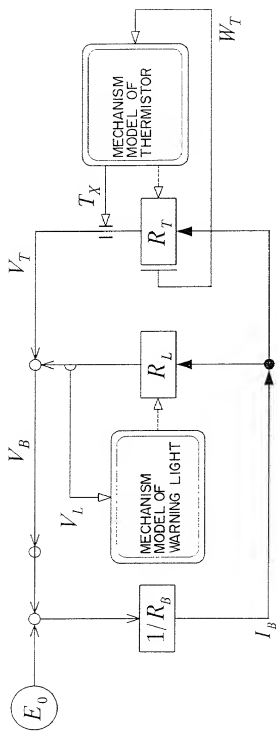


Fig.39

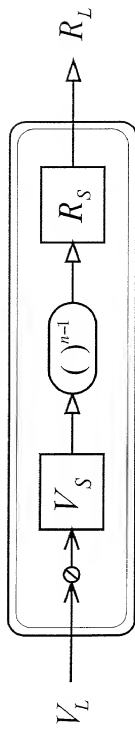


Fig.40

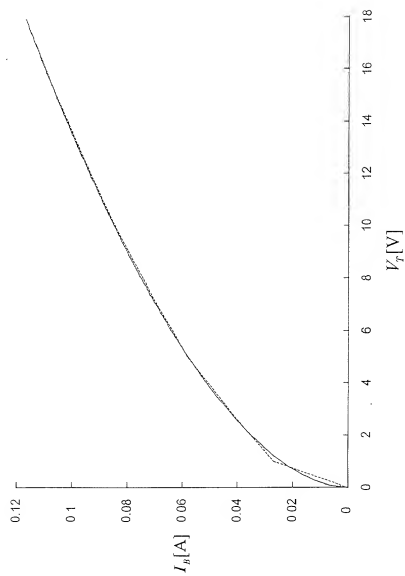


Fig.41

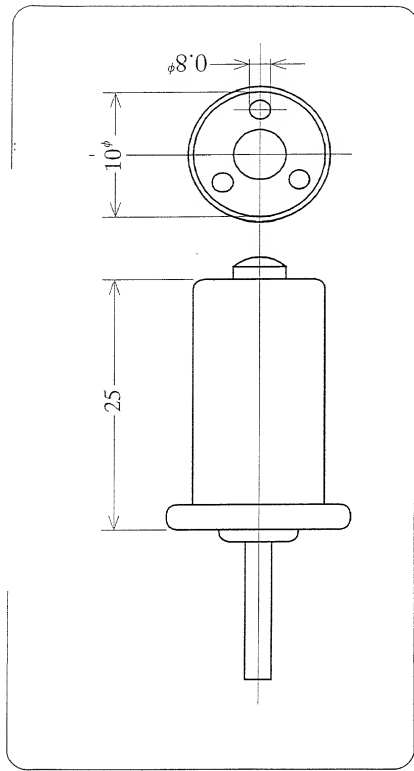


Fig.42

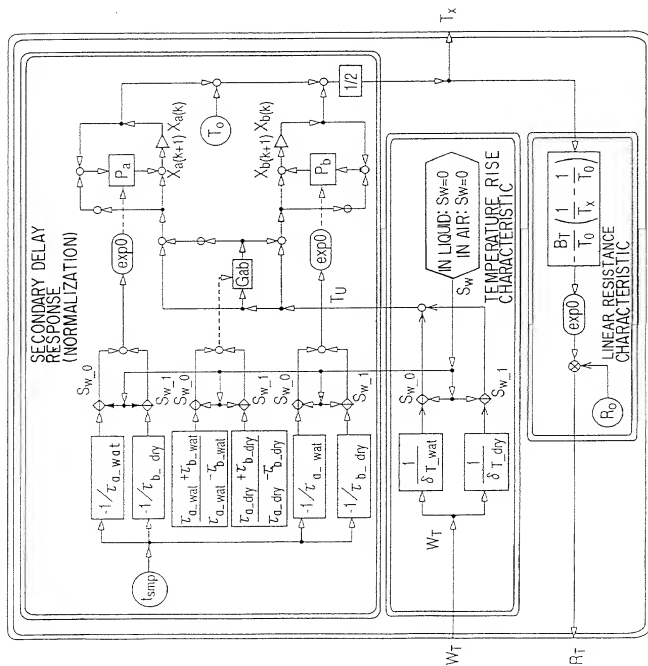


Fig.4.3



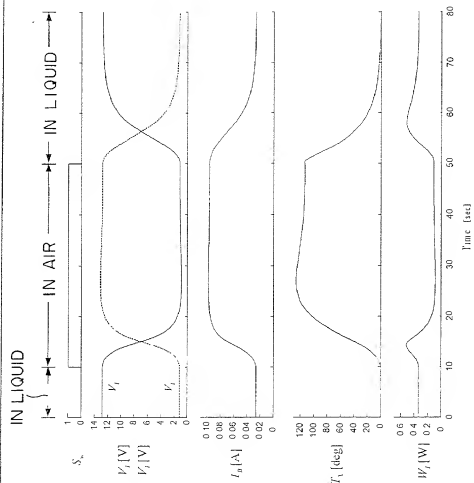


Fig. 4.4

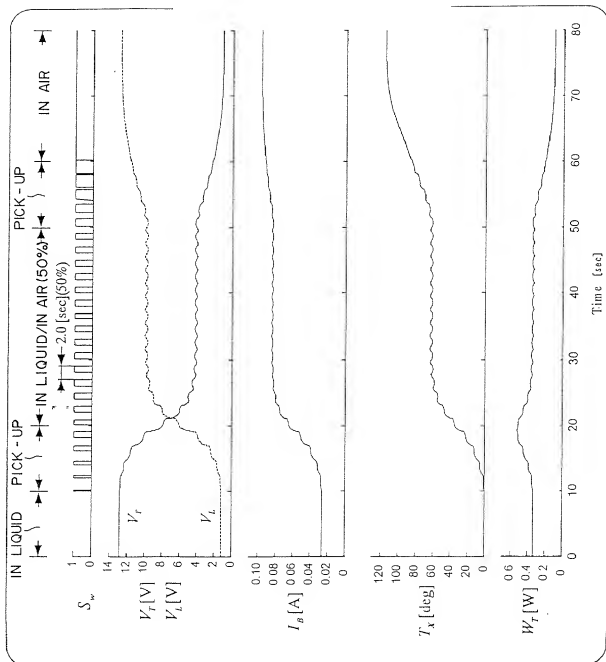


Fig.45

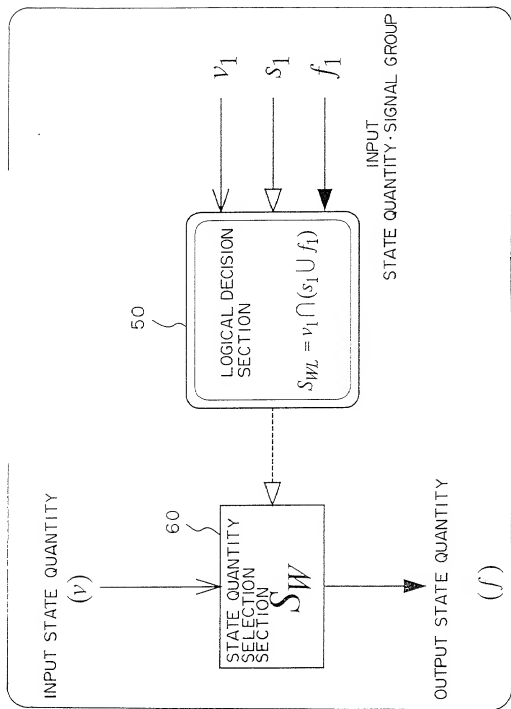


Fig.46

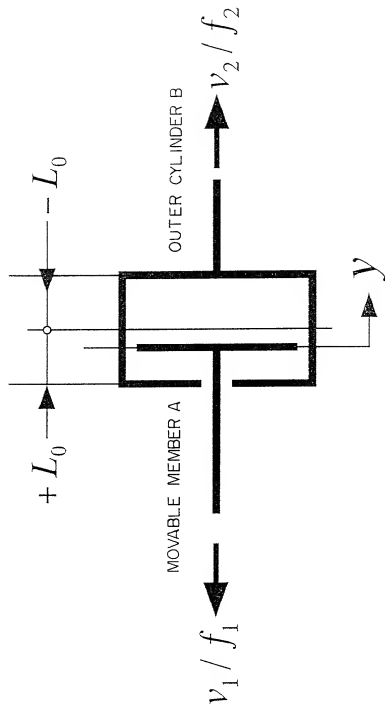


Fig.47

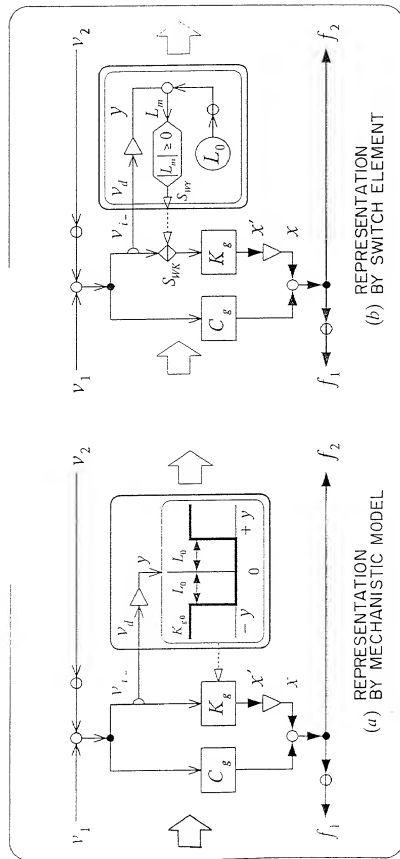


Fig.4.8



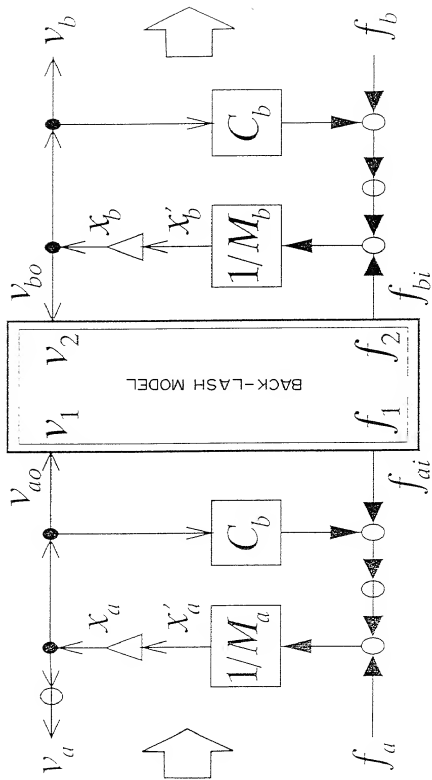


Fig.50

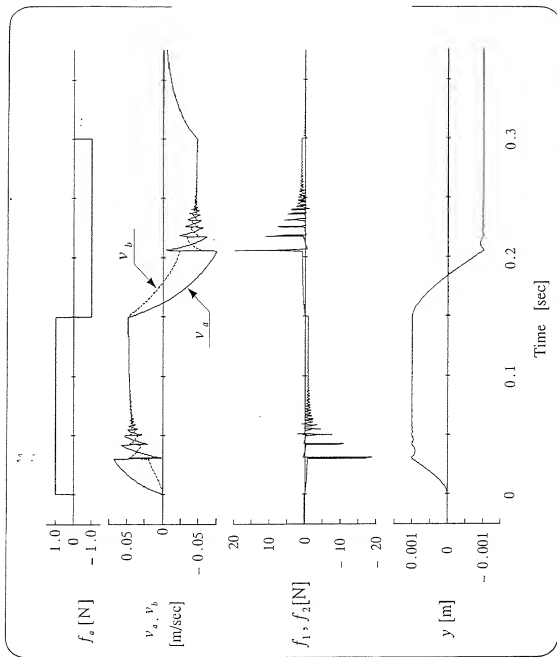


Fig. 51



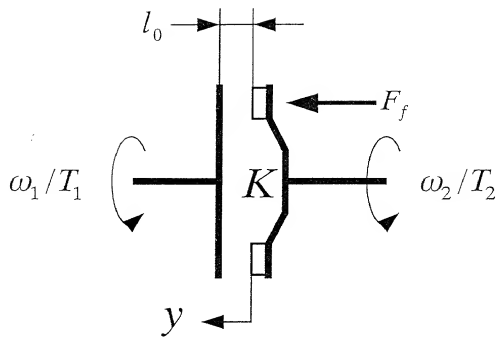


Fig.52

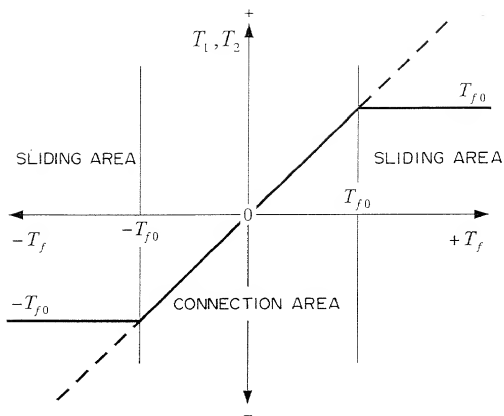


Fig.53

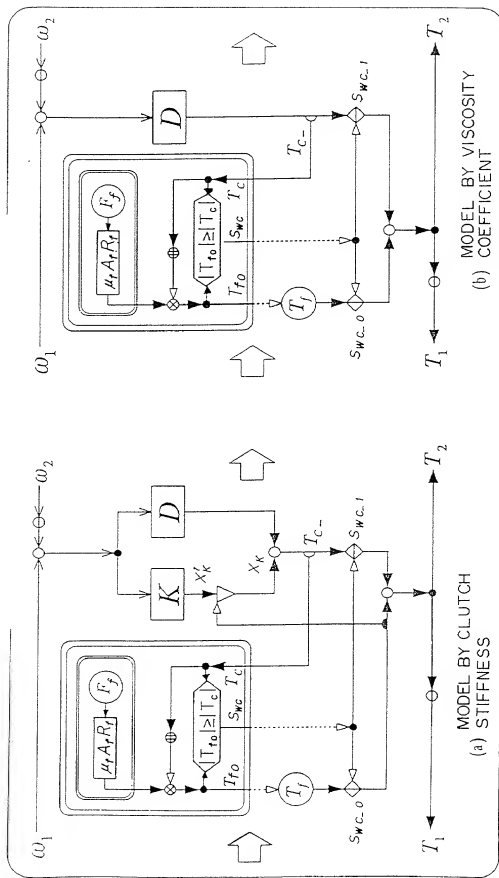


Fig.54

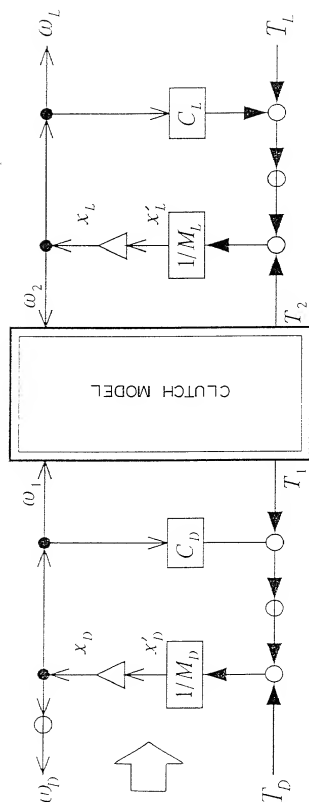


Fig. 55

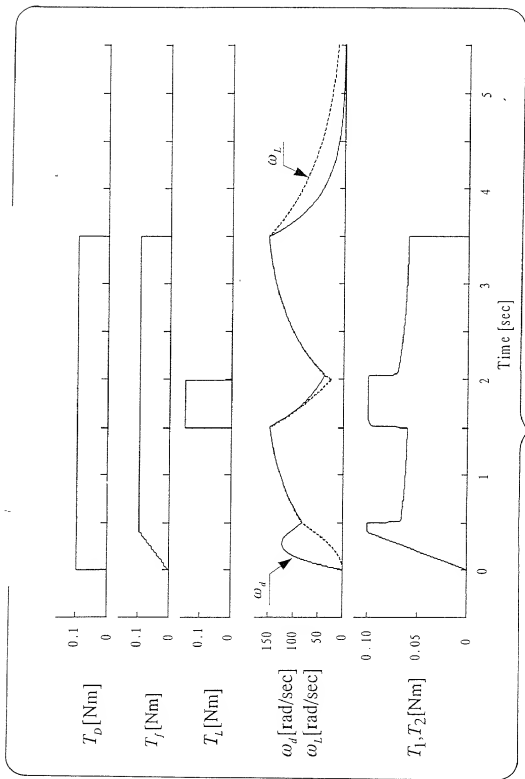


Fig.56

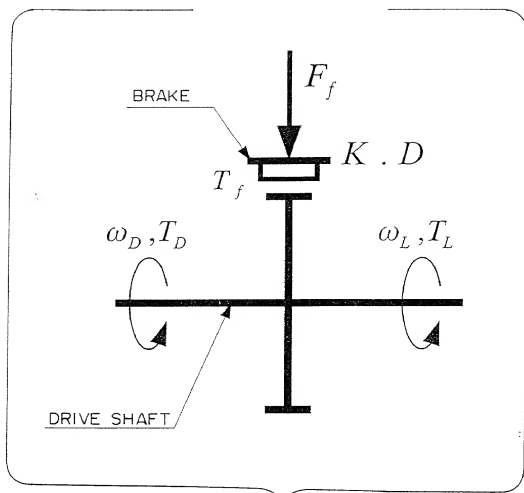


Fig.57

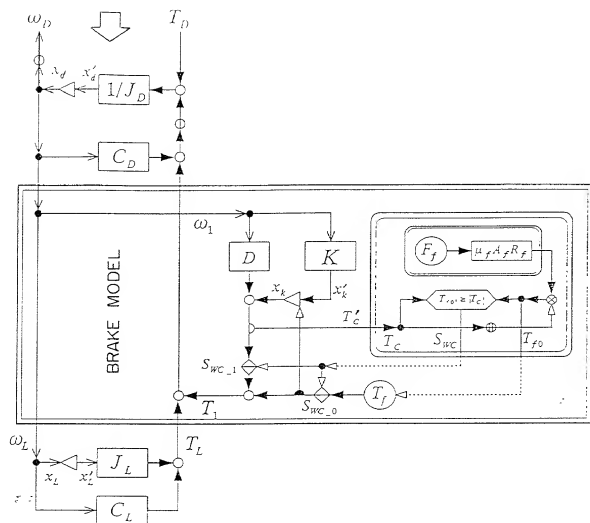


Fig.58

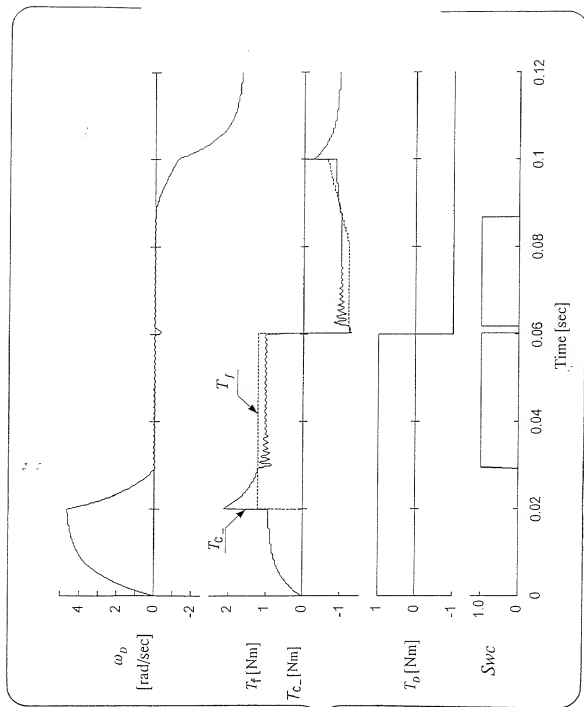


Fig.59



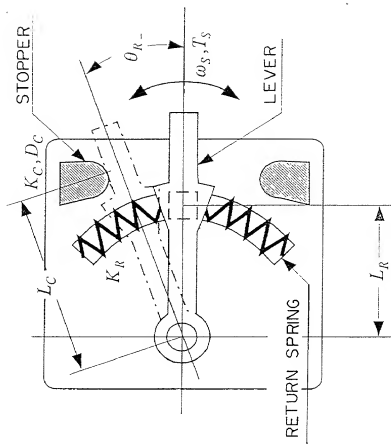


Fig.60

Fig. 61

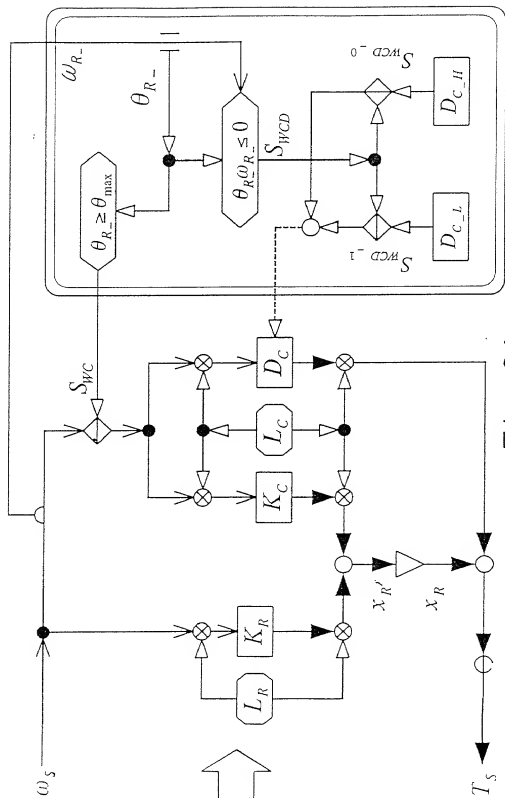


Fig. 61

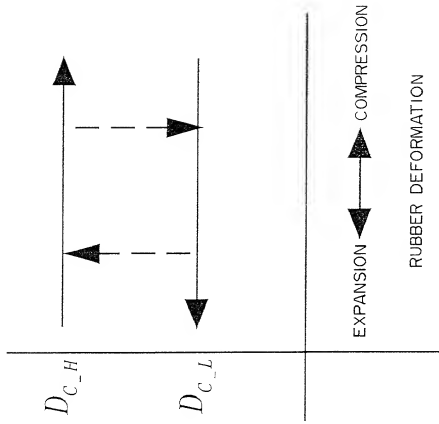


Fig.62

14

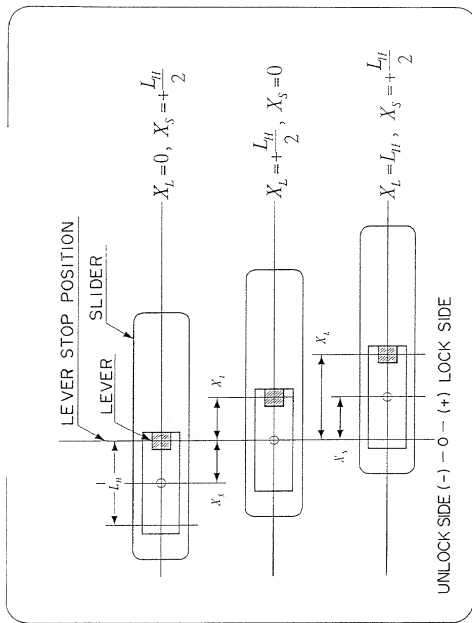
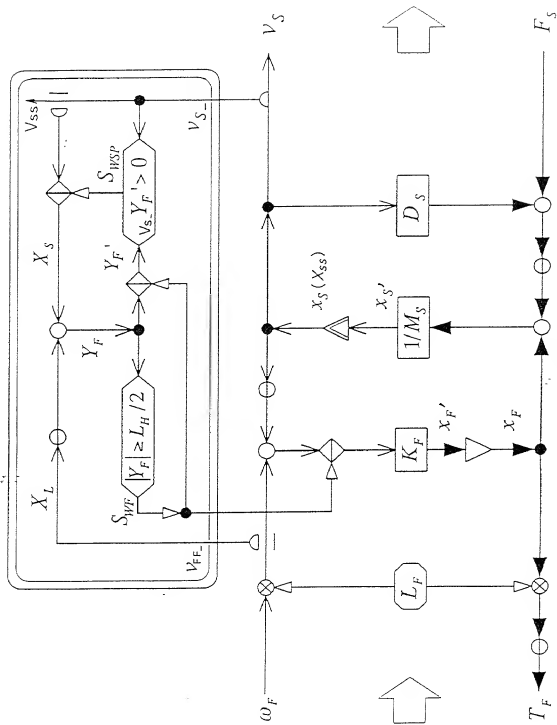


Fig.63



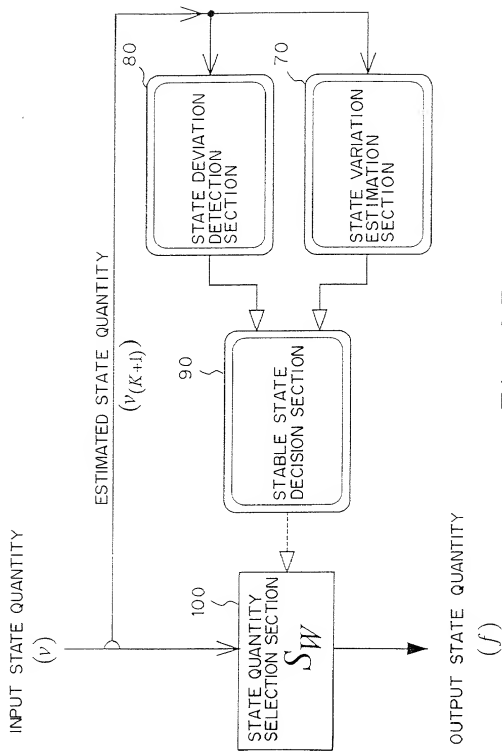


Fig.65

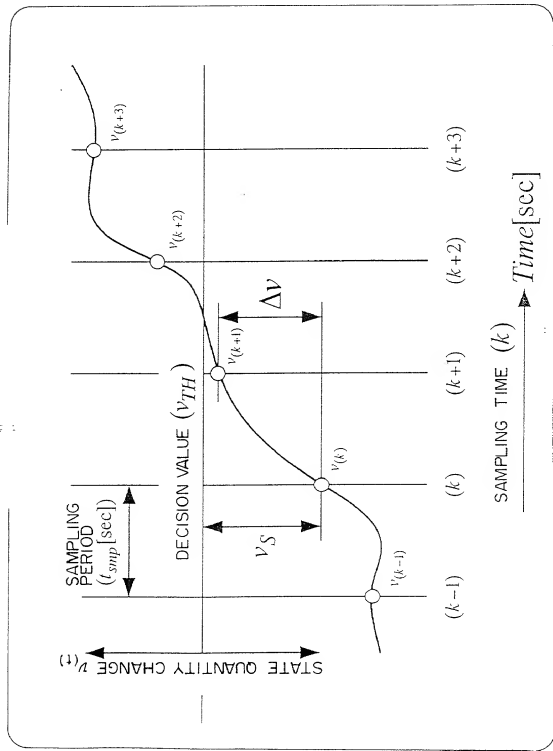


Fig.66

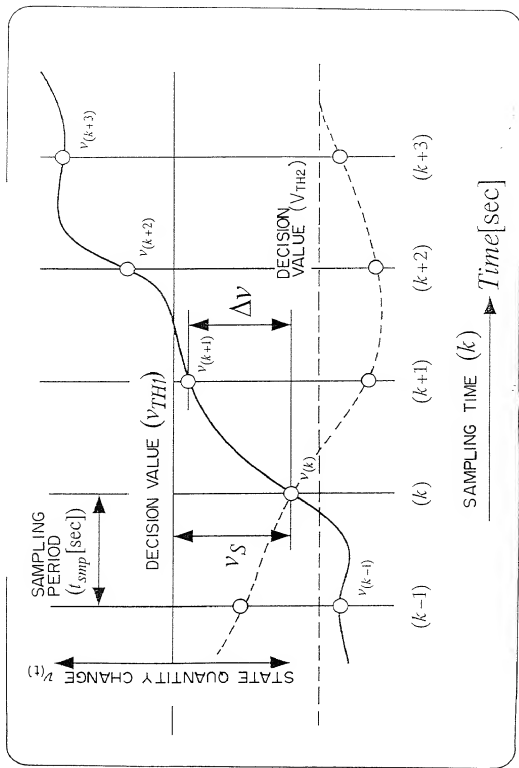


Fig.67



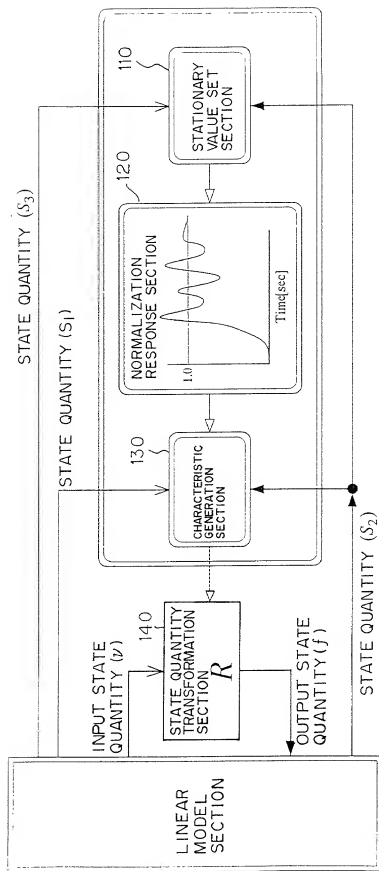


Fig.68

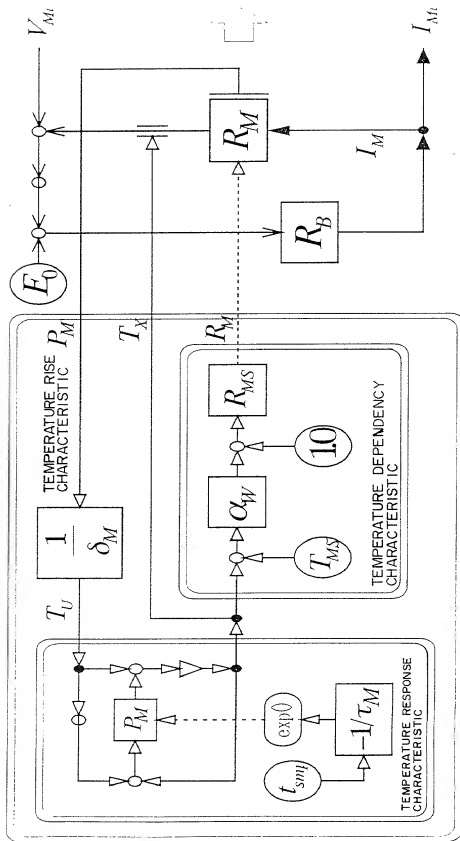


Fig.69

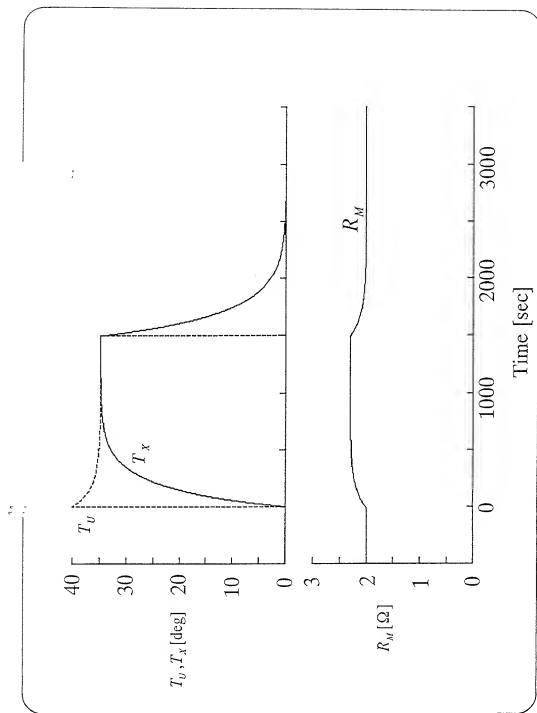


Fig. 70

14

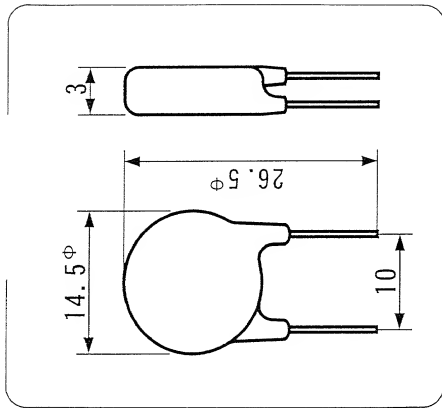


Fig. 71

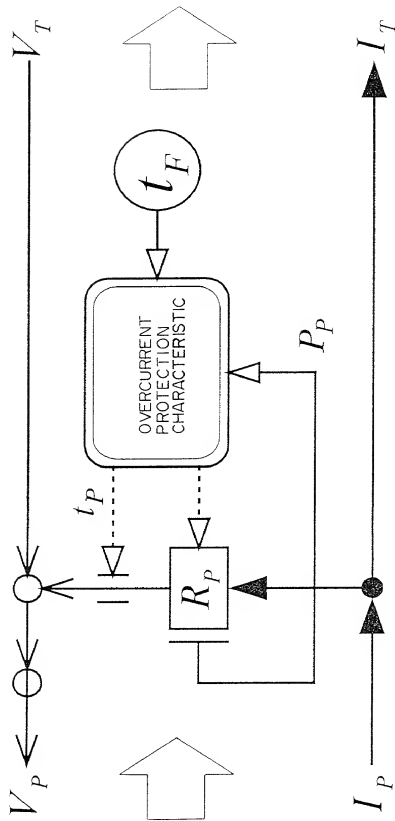


Fig. 7.2

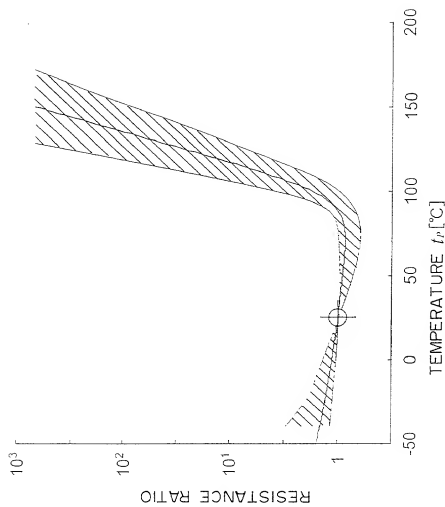


Fig.73

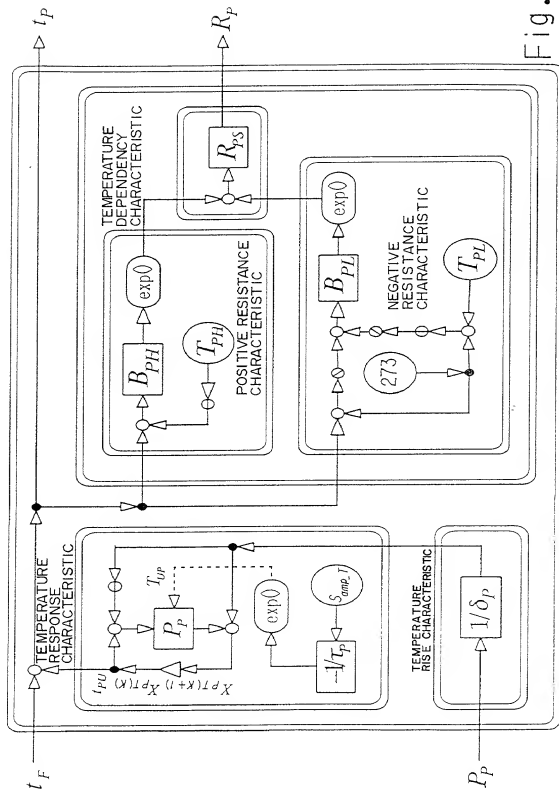


Fig. 74

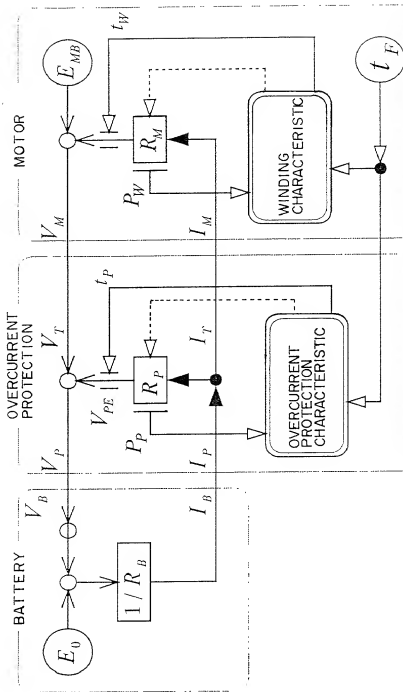


Fig.75



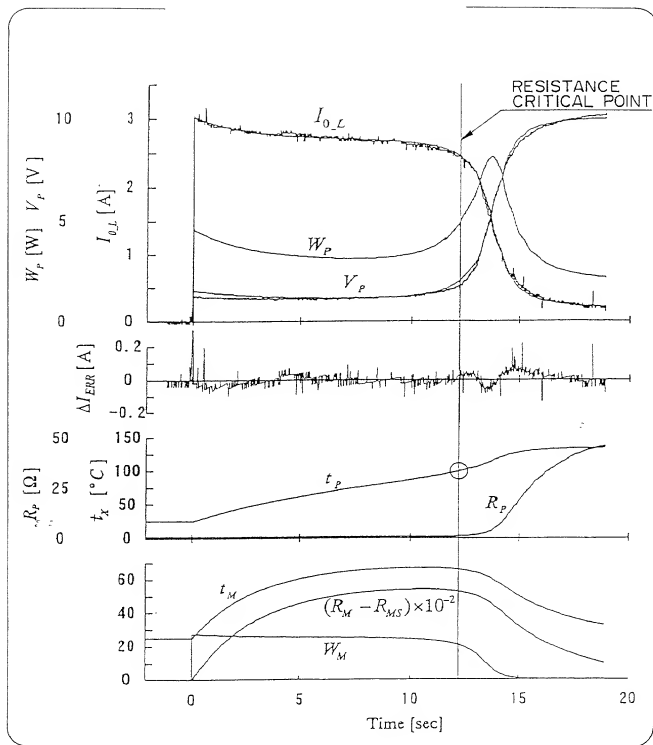
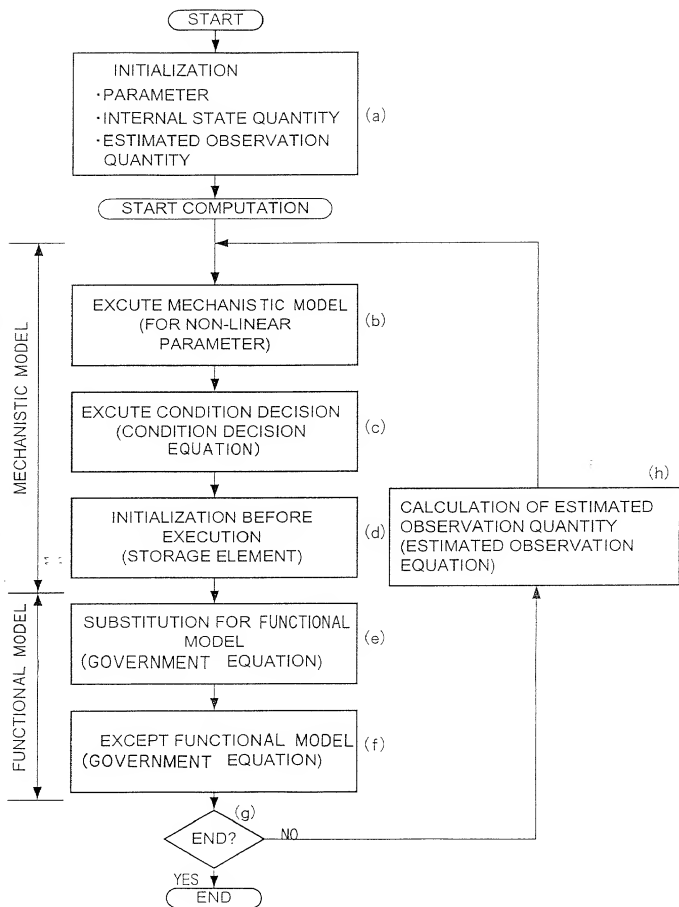


Fig.76



| SYMBOLS NAME   |  | SYMBOL | REMARK   |
|----------------|--|--------|--|
| STATE QUANTITY | ENERGY                                   |        | ENERGY INPUT AND OUTPUT DIRECTION  |
|                | POTENTIAL QUANTITY                       |        | VOLTAGE, VELOCITY, RATE OF FLOW, etc.  |
|                | FLOW QUANTITY                            |        | CURRENT, POWER, PRESSURE, etc.   |
| OPERATOR       | ADDITION                                 |        | $C = A + B$  |
|                | MULTIPLICATION                           |        | $C = A \times B$   |
|                | BRANCH (DISTRIBUTION)                    |        | $A = A = A$  |
|                | SIGN TRANSLATION                         |        | $B = -A$   |
|                | INVERSION                                |        | $B = 1 / A$  |
|                | INTEGRAL                                 |        | $B = \int A \, dt$   |
|                | DIFFERENTIATION                          |        | $B = dA / dt$  |
| CHARACTERISTIC | FACTOR TRANSLATION                       |        | $B = R \times A \quad (R : \text{FACTOR})$   |
|                | CHARACTERISTIC TRANSLATION               |        | $B = P \times A \quad (P : \text{CHARACTERISTIC})$   |
|                | SIDE LOAD                                |        | $B = A \quad (A : \text{STATE QUANTITY})$  |
|                | COORDINATE FACTOR                        |        | $B = \Phi A$<br>$\Phi^{-1} D = C \quad (\Phi : \text{FACTOR})$   |
| COEFFICIENT    | OBSERVATION POINT                        |        | $B = A$<br>( $B$ : OBSERVATION VALUE OF $A$ )  |
|                | FUNCTIONAL MODEL ELEMENT                 |        | $A_p, B_p$ : POTENTIAL QUANTITY<br>$A_f, B_f$ : FLOW QUANTITY  |
|                | STORAGE STATE QUANTITY (INTERNAL ENERGY) |        | $B = (\text{INTERNAL TEMP. SET VALUE OF } A)$<br>$C = (\text{INTERNAL TEMP. OBSERVATION})$<br>(POTENTIAL QUANTITY) |
|                | ENERGY OBSERVATION                       |        | $C = AB \text{ or } A^2 R$<br>( $A, B$ : POTENTIAL/FLOW QUANTITY)  |

Fig.78


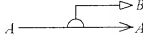
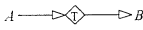

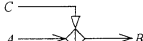



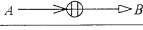

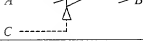
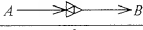

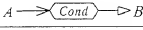
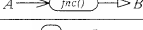
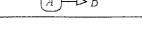
| QUANTITY  | OPERATION<br>QUANTITY<br>SUBSTITUTION<br>QUANTITY |  | OPERATION: CHARACTERISTIC VALUE<br>(SIGNAL OTHER THAN STATE QUANTITY)<br>SUBSTITUTION OF CHARACTERISTIC<br>FACTOR: SIDE LOAD |
|---|---|---|--|
| LOGICAL OPERATOR<br>(FOR FUNCTIONAL MODEL USE)      | ESTIMATED<br>OBSERVATION<br>QUANTITY              |  | $B_{(k+1)} = A_{(k+1)}$<br>B OBSERVES VALUE OF SAMPLING<br>PERIOD (k+1) BEFORE PRESENT (k)                                   |
|   | TIME<br>OBSERVATION                               |  | NORMAL: A=1 OR 0<br>STORE EXECUTION TIME time WHEREIN<br>A BECOMES 1 AND MAINTAIN THE<br>SAME                                |
|   | NC SWITCH<br>(NORMALLY ON)                        |  | NORMAL: C=0<br>if (C=0) then (B=A) else (B=0)  |
|   | NO SWITCH<br>(NORMALLY OFF)                       |  | NORMAL: C=0<br>if (C=1) then (B=A) else (B=0)  |
|   | LOGICAL PRODUCT                                   |  | $C = \min(A, B)$<br>(SMALLER ONE OF INPUTS<br>A AND B IS SET TO C)   |
|   | LOGICAL SUN                                       |  | $C = \max(A, B)$<br>(LARGER ONE OF INPUTS<br>A AND B IS SET TO C)  |
| NON - LINEAR OPERATOR<br>(FOR MECHANICAL MODEL USE) | ABSOLUTE<br>VALUE                                 |  | $B =  A $  |
|   | SIGNAL  |  | $B = \frac{1}{A}$  |
|   | SQUARE  |  | $B = A^2$  |
|   | INITIALIZATION<br>(INTEGRAL)                      |  | if (C=0) then $B = \int A dt$<br>else $B = 0$  |
|   | CONVOLUTION<br>INTEGRAL                           |  |  |
|   | SAMPLING  |  | $B_{(k+1)} = A_{(k+1)}$<br>(INPUT C IS TIMING OF SAMPLING)<br>$B_{(k+1)} = A_{(k+1)}$<br>(OMITTED INPUT C)                   |
|   | CONDITIONAL<br>DECISION                           |  | if (Cond) then (B=1) else (B=0)<br>(Cond: CONDITION DECISION FORMULA)  |
|   | FUNCTION  |  | $B = fnc(A)$<br>(fnc(): FUNCTION NAME/SYMBOL)  |
|   | OPERATION   |  | $A = B$<br>(A: SIGNAL)   |

Fig.79

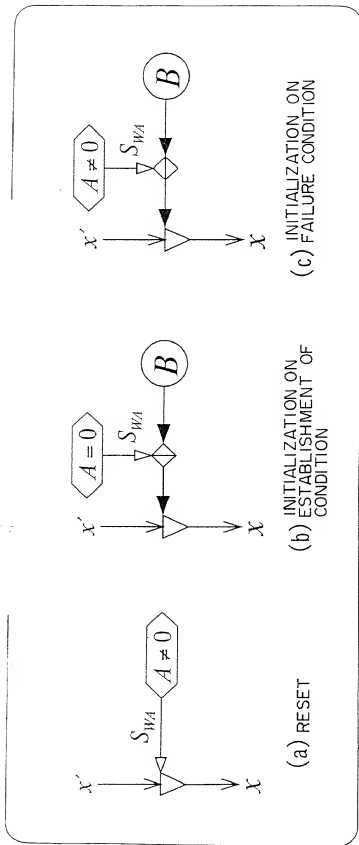


Fig.80

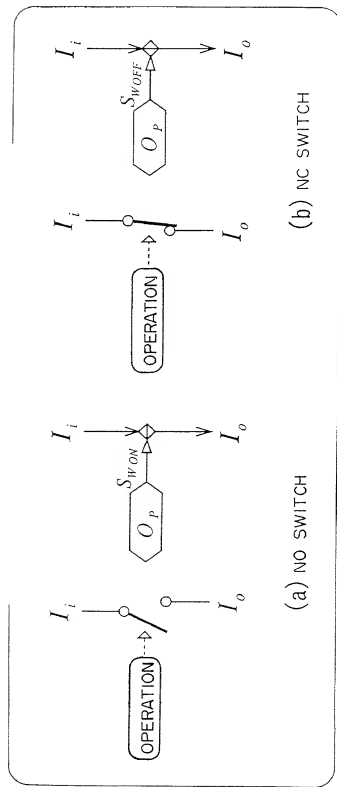


Fig.81

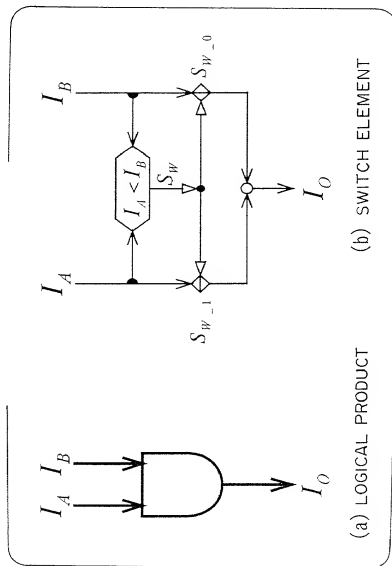


Fig.82

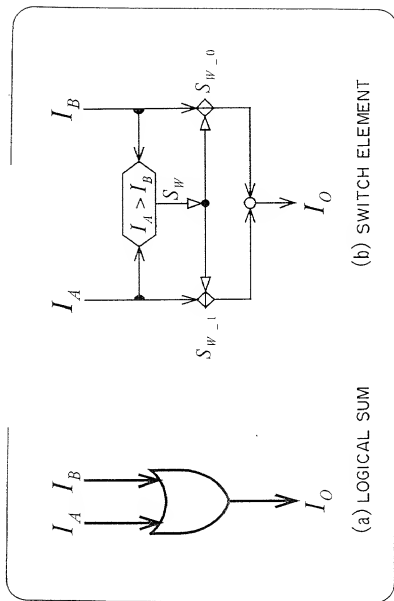


Fig.8.3